BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

What is claimed is:

1. A single pole type magnetic head comprising a writing head unit including a main pole and an auxiliary pole, and a reading head unit, wherein the write field intensity generated from the main pole has a concentric distribution in which the maximum intensity occurs from the main pole central portion as seen from the air bearing surface side, and each of the contours of the write field intensity has a larger radius of curvature on the trailing side than that of each of the contours of write field intensity generated from a main pole in which the pole width in the track width direction and the pole width of the portion opposed to an auxiliary pole of the main pole central portion as seen from the air bearing surface are equal to each other.

2. A single pole type magnetic head comprising a writing head including a main pole and an auxiliary pole, and a reading head including a read element, wherein the main pole has a recess on the trailing side of its air bearing surface.

3. The single pole type magnetic head according to claim 2, wherein the depth of the recess is smaller than the length in the track width direction of the main pole.

4. The single pole type magnetic head according to claim 3, wherein the depth of the recess is larger than 1/10 of the length in the track width direction of

the main pole.

5. A single pole type magnetic head comprising a writing head including a main pole and an auxiliary pole, and a reading head including a read element, wherein the outline of the main pole as seen from the air bearing surface side has a first line segment opposed to the auxiliary pole and a second line segment opposed to the first line segment, and the second line segment has one or more points closer to the first line segment than opposite ends of the second line segment.

6. The single pole type magnetic head according to claim 5, wherein the length of a normal drawn from a point closest to the first line segment out of the one or more points to the second line segment is smaller than the length in the track width direction of the main pole.

7. The single pole type magnetic head according to claim 5, wherein the length of a normal drawn from a point closest to the first line segment out of the one or more points to the second line segment is larger than 1/10 of the length in the track width direction of the main pole.

8. A magnetic head slider mounting thereon a writing head including a main pole and an auxiliary pole, and a reading head including a read element, wherein a recess is formed on the side of the main pole closer to the side of air outflow of the magnetic head slider when the main pole is seen from the air bearing

surface side.

9. A head assembly, comprising: a magnetic head slider mounting thereon a writing head including a main pole and an auxiliary pole, and a reading head including a read element; a gimbal for supporting the magnetic head slider; and a suspension arm for fixing the gimbal thereon, wherein a recess is formed on the side of the air bearing surface of the main pole opposite the fixing point with the gimbal and the suspension arm when the main pole is seen from the air bearing surface side.

10. A magnetic disk storage apparatus, comprising: a perpendicular magnetic recording medium; a writing head including a main pole and an auxiliary pole; a reading head including a read element; and a driving unit for rotatably driving the perpendicular magnetic recording medium in a given direction, wherein a recess is formed on the downstream side of the direction of rotation in the main pole when the main pole is seen from the air bearing surface side.

11. A magnetic disk storage apparatus, comprising: at least one or more perpendicular magnetic recording media; at least two or more magnetic heads; and a driving unit for rotatably driving the perpendicular magnetic recording media in a given direction, wherein in at least one of the two or more magnetic heads, a recess is formed on the downstream side of the direction of rotation in the main pole when

the main pole is seen from the air bearing surface side.

12. A method for manufacturing a single pole type magnetic head, comprising the steps of:

forming a groove on an inorganic insulating layer;

forming a magnetic layer serving as a main pole in the groove; and

forming a recess in the magnetic layer.

13. The method for manufacturing a single pole type magnetic head according to claim 12, wherein the recess is formed by ion milling.

14. The method for manufacturing a single pole type magnetic head according to claim 12, wherein the recess is formed by removing a part of the magnetic layer with any method of CMP, acid treatment, RIE, and milling.

15. The method for manufacturing a single pole type magnetic head according to claim 12, wherein the step of forming a groove on the inorganic insulating layer includes a step of forming a resist pattern on the inorganic insulating layer and the step of performing etching using the resist pattern as a mask.

16. The method for manufacturing a single pole type magnetic head according to claim 12, wherein the step of forming a magnetic layer in the groove includes a step of flattening the magnetic layer formed in the groove.

17. A method for manufacturing a single pole type

head, comprising the steps of:

forming a resist pattern on an inorganic insulating layer;

forming a magnetic layer serving as a main pole on the inorganic insulating layer on which the resist pattern has been formed;

removing the resist pattern; and

forming a recess on the magnetic layer from which the resist pattern has been removed.